UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,879	01/06/2006	Celine Poncet-Legrand	0070557-000003	9683

21839 7590 11/04/2009

BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
GUGLIOTTA, NICOLE T	
ART UNIT	PAPER NUMBER
1794	

NOTIFICATION DATE	DELIVERY MODE
11/04/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/533,879	PONCET-LEGRAND ET AL.	
	Examiner	Art Unit	
	NICOLE T. GUGLIOTTA	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 39* is/are pending in the application.

4a) Of the above claim(s) *15 - 38* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 14, 39* is/are rejected.

7)☒ Claim(s) *2* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 13, 2009 has been entered.

Claim Objections

1. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Applicant claims dissymmetric particle of nanometric or mesoscopic size in claim 1. Applicant specifically defines nanometric sized particles to have a size range between 1 nm and 100 nm and mesocopic particles to have a size range between 100 nm and 1 μm (specification, pg 2, Lines 16 - 21). Claim 2 is dependent upon claim 1 and thus fails to further limit the subject matter of claim 1.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 recites the limitation "the inorganic material A is a metal" in “the particle as claimed in claim 3". There is insufficient antecedent basis for this limitation in the claim. The particle of claim 3 contains an inorganic material A of a mineral oxide. Therefore, it is unclear how the inorganic material A of claim 4, which depends upon claim 3, is a metal, especially considering claim 1, which both claims 3 and 4 depend upon, claims the inorganic material A is a mineral oxide or a metal (not both).

Claim Rejections - 35 USC § 103

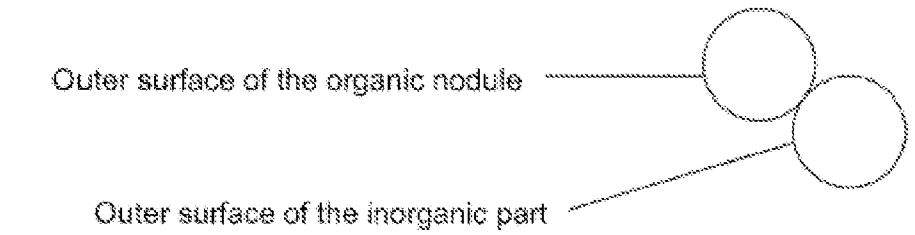
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

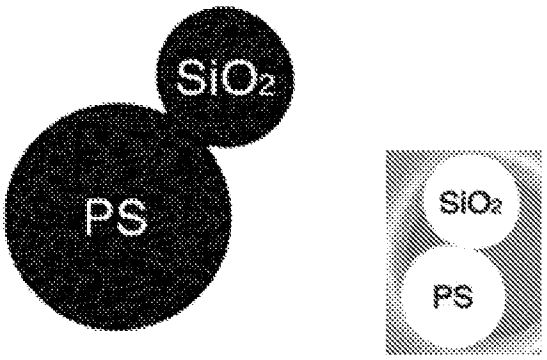
3. Claims 1 – 12 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. (J. Am. Chem. Soc. 2001, 123, 771 – 772), in view of Reculusa et al. (Chem. Mater. 2002, 14, 2354 – 2359).

Note: Reculusa et al. was submitted by the Examiner in the May 13, 2009 Office Action.

APPLICANT'S INVENTION (drawing taken from Applicant's Remarks, pg 14, dated July 16, 2009)



PRIOR ART (Xia et al., Figures 2c and 3; wherein PS is a polystyrene organic nodule and SiO_2 is the inorganic part of the particle)



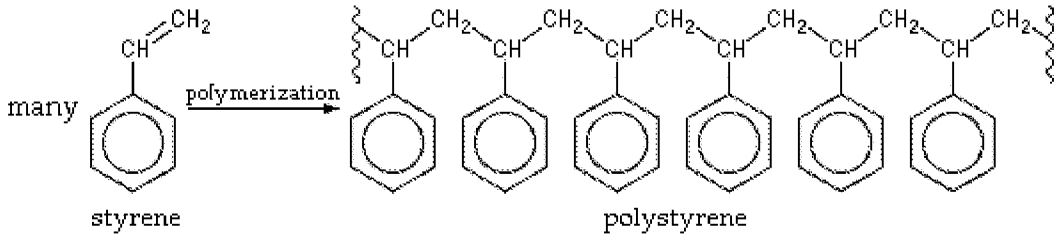
In regard to claims 1 - 3, 10 & 14, Xia et al. disclose an asymmetric dimer comprising silica and polystyrene (Figure 2, pg 772, left column of text). Xia et al. disclose part sizes greater than 1 micron, which is larger than the size of the entire particle claimed by Applicant. However, Xia et al. teach the size of the polymer beads can be changed and the overall scale can be much smaller than the examples given (pg 772, last paragraph). Reculusa et al. also disclose particles for use in paints, gas-liquid chromatography and catalyst supports (pg 2354, right column, last 3 lines of last

paragraph) consisting of 2 parts: spherical silica particles and spherical polystyrene nodules (pg 2354, second column first paragraph). The silica (inorganic) part of the particles disclosed by Reculusa et al. have an approximate diameter of 500 nm (Pg 2356, right columns, first paragraph) and each polystyrene nodule has a diameter of 200 nm (pg 2357, right column, bottom of the third paragraph). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the size of the polystyrene beads and silica colloids in the asymmetric dimers disclosed by Xia et al. to optimize the particles size according to the intended use, as Reculusa et al. teach there are a wide variety of uses for particles consisting of silica carriers and polystyrene nodules.

In regard to claim 4, as discussed above for claims 1 and 3, Xia et al. disclose the inorganic material is silica (silicon dioxide). Silicon is a metal. When silicon is in the form of silica, it is stable in an aqueous medium.

In regard to claims 5 & 6, Reculusa et al. also disclose the silica surface is modified to allow anchoring of the polymers. This is achieved by grafting alkoxysilane to the silica surface (pg 2355 Lines 14 - 18).

In regard to claims 7 – 8, Xia et al. disclose polystyrene as the organic part of their asymmetric dimer. Polystyrene polymer comprises recurrent units of –CR = CR'-, wherein R represents H and R' represents the alkyl group of a phenyl ring, as shown below. The phenyl ring is an aromatic group (comprises resonating double bonds) and is thus a functional group.



In regard to claim 9, Xia et al. and Reculusa et al. are both silent in regard to cross-linking. However, any polymer nodule contains cross-linking or it doesn't. Therefore, regardless the absence of an explicit disclosure by the references, the polystyrene nodules disclosed by both Xia et al. and Reculusa et al. are crosslinked or noncrosslinked.

In regard to claim 11, Xia et al. disclose in Figure 3 asymmetric dimers, each comprising a silica ball of 2.3 μm and a polystyrene bead of 2.5 μm, thereby forming a dimer resembling a dumbbell shape.

In regard to claim 12, Xia et al. disclose asymmetric dimers that have the shape of a snowman in Figures 2(A) - 2(D), pg 772, left column of text, half way down the column).

4. Claims 13 & 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. & Reculusa et al. as applied to claim 1 above, and further in view of Yadav et al. (US 2003/0102099 A1).

In regard to claim 13, Xia et al. & Reculusa et al. are silent in regard to the various shapes the inorganic particle may have. Yadav et al., however, disclose nano-dispersed powders used in paints and catalyst supports (¶ [0011]), comprising carrier

particles (i.e. silica) (¶ [0053]) and a dispersed particle attach to the carrier particle, such as a polymer (¶ [0054]). The inorganic particle (i.e. silica) can be in the shape of spheres, tubes (corresponds to Applicant's "rod", platelets (corresponds to Applicant's "disk") & irregular shaped structures (Figure 2, ¶ [0043]). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention for the inorganic particle to be shaped according to its desired application, as disclosed by Yadav et al.

In regard to claim 39, Xia et al. and Reculusa et al. fail to disclose particle parts in the range of 50 nm to 250 nm. Yadav et al., however, disclose nano-dispersed powders used in paints and catalyst supports (¶ [0011]), comprising carrier particles (i.e. silica) (¶ [0053]) and a dispersed particle attach to the carrier particle, such as a polymer (¶ [0054]). These powders (i.e. particles) are preferably less than 100 nm is size (sub-micron and nanoscale) (¶ [0009]) because these particles are the building blocks for desirably smaller products (¶ [0004]). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the size of the particles disclosed by Xia et al. (and Reclusa et al.) to less than 100 nm in order to build smaller products, which would satisfy the demands of the markets for smaller products, as taught by Yadav et al.

Response to Arguments

5. Applicant argues, "Since the prior rejection was maintained, it cannot now be argued that applicants' amendments necessitated the new grounds of rejection. And,

as applicants must now response to those rejections, they are entitled to have that response duly considered" (Remarks, pgs 10 – 11).

EXAMINER'S RESPONSE: Applicant's arguments have been fully considered but they are not persuasive. Simply because the previous rejection was maintained does not mean the scope of the claims did not change and therefore better art can be applied as result of a change in the scope of the claims. Examiner maintains the arguments held by the previous examiner.

6. Applicant argues, "…in a Raspberry-like particle, disclosed by Reculusa, many independent and discrete units or nodules of polymer are bound to a silica particle. See, e.g., Reculusa, Figures 3, 6 and 7. On the contrary, however, the claimed invention expressly recited that only a single polymer nodule is bound to the inorganic particle" (Remarks, Pg 12).

EXAMINER'S RESPONSE: Applicant's arguments have been fully considered and are persuasive. The rejection of the claims under the previously applied art has been withdrawn due to Applicant's amendment.

7. Applicant argues, "The teachings of both Reculusa and Reculusa II are consistent in the use of the term raspberrylike to describe certain particles, and those particles are expressly taught by Reculusa II to be symmetrical particles" (Remarks, Pg 12).

8. Applicant has made numerous arguments in regard to the references of Shiratsuchi and Eriyama.

EXAMINER'S RESPONSE: Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE T. GUGLIOTTA whose telephone number is (571)270-1552. The examiner can normally be reached on M - F 8:30 a.m. - 6 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R. Sample/ /NICOLE T GUGLIOTTA/

Supervisory Patent Examiner, Art Unit 1794 Examiner, Art Unit 1794